TABLE 2.—*Earthquake of July 9, 1905, N-S.*—Continued.

Duration of first preliminary tremors	17 min.	32 sec.	
Duration of second preliminary tremors	11 "	35 "	
Duration of principal portion	12 "	45 "	
Total duration of earthquake.	1 hr. 29 "	50 "	
Average complete period of seven waves in second preliminary tremors			30 sec.
Average complete period of large waves of principal portion			20 to 30 "
Period of pendulum			27 sec.
Maximum double amplitude of actual displacement of the earth at the seismograph			0.81 mm.
Magnification of record			10 times.

The waves are very complex in the principal portion and die away very gradually so that the beginning of the "end portion" is not sharply defined.

TABLE 3.—*Earthquake of July 22–23, 1905, N-S. component.*

	h.	m.	s.	
First preliminary tremors began	10	10	13	p. m.
Second preliminary tremors began	10	25	33	p. m.
Principal portion began	10	39	00	p. m.
Principal portion ended	10	59	00	p. m.
End of earthquake, a. m. July 23	0	21	30	p. m.
Duration of first preliminary tremors	15 min.	20 sec.		
Duration of second preliminary tremors	13 "	27 "		
Duration of principal portion	20 "	00 "		
Total duration of earthquake.	2 hr. 11 "	17 "		
Period of pendulum			26 sec.	
Maximum double amplitude of actual displacement of the earth at the seismograph			5.40 mm.	
Magnification of record			10 times.	

Largest earthquake yet recorded.

TABLE 4.—*Earthquake of July 22–23, 1905, E-W. component.*

	h.	m.	s.	
First preliminary tremors began	10	11	00	p. m.
Second preliminary tremors began	10	24	00	p. m.
Principal portion began	10	30	40	p. m.
Principal portion ended	10	53	00	p. m.
End of earthquake, a. m., July 23	0	46	15	p, m.
Duration of first preliminary tremors	13 min.	00 sec.		
Duration of second preliminary tremors	6 "	40 "		
Duration of principal portion	22 "	20 "		
Total duration of earthquake.	2 hr. 35 "	15 "		
Period of pendulum			30 sec.	
Maximum semiamplitude of actual displacement of the earth at the seismograph (to the west)			5.4 mm.	
Magnification of record			13.2 times.	

The pen went off the sheet to the east three times, viz, more than five millimeters, hence actual displacement exceeded eleven millimeters.

A critical examination of the wave motions as they are found recorded in the various records thus far obtained has led us to the opinion that the so-called steady mass of the seismograph fails to remain at rest as completely as it is generally supposed to do. In other words the motion of the earth soon sets the "steady mass" itself to swinging more or less, so that the trace finally resulting from the two movements is not a faithful record of the motions of the earth. The problem of completely separating the one motion from the other is very complex and difficult, and a full analysis has not thus far been brought out. Some notes presenting an approximate method of analysis have recently been employed and the results obtained will be given in a future communication to the REVIEW.

TIDES AND THUNDERSTORMS.

By JOHN C. BEANS, Cooperative Observer, Moorestown, N. J.

A recent circular requesting observations on the course of thunderstorms reminds me of certain articles and communications in the MONTHLY WEATHER REVIEW during the past year and the strong inclination I felt at those times to send in a communication disparaging the idea of perceptible inductive influence of tidal currents on atmospheric vapors, nay, on air currents too and whole thunderstorms as suggested.

Some years ago my father was a considerable grower of strawberries, employing some forty pickers daily. Many of these came from the village of Bridgeboro, then a considerable sailing packet port on the Rancocas two or three miles from the Delaware, but doing business several miles farther up, chiefly to Philadelphia. Navigating these sloops and schooners against wind and tide on rather narrow and crooked streams and between showers, if possible, developed in the captains and hands of these craft an alertness and shrewdness in observing the ways of the weather, probably not yet excelled, except by the educated part of the weather service. They would look at a possible coming shower, observe the state of the tide, and remark that if the tide was running up, the shower would go up the Delaware River, but if the tide was running down the shower might be expected to go up the Rancocas Creek, and we would get some. Ever since then showers have continued going sometimes in line with the Delaware, sometimes with the Rancocas, sometimes elsewhere. Those pickers generally knew the state of the tide, for two or three of the packets usually sailed past them daily. I can now see approximately the stage of the tide from my home, but I do not keep in mind its course and have not always a Public Ledger Almanac. However, with a farmer's need of rain lore, I have been watching showers (and for showers) these 35 years, but have not seen any four-times-a-day changeableness in the course of showers, nor any other changeableness that the tidal theory might lead to. The course of showers has often been with that of middle clouds when such appear. Did these old navigators of Delaware Bay get their theory from their fellow craftsmen, the farmers of Cape May County, and expect it to apply to all streams?

HAS THE RAINFALL OF SOUTHERN CALIFORNIA BEEN AFFECTED BY ANY SO-CALLED RAINMAKER?

During the discussion in southern California in April, 1905, over the merits of an individual calling himself a rainmaker, there was sent out by the Associated Press a general news despatch that seems to show there are a few believers in the supernatural still left over to this enlightened age. It behooves the press, as the leader of public opinion, to do what it can to enable the public to appreciate the influence of man on the weather.

From Los Angeles to San Bernardino is an eastward stretch of 75 miles; the railroad runs from the Pacific coast eastward along the southern slope of the San Gabriel, Cucamonga, and San Bernardino ranges of mountains. Los Angeles is about twenty miles east and also twenty miles north of the curved coast line. Pasadena is ten miles northeast of that and Altadena five miles north of that. The new Solar Observatory of the Carnegie Institution is on Mount Wilson near Pasadena. This whole region is a garden under the latitude of 34° north receiving moderate winter rains and an abundance of sunshine and needing only a wise supervision of the irrigation ditches to produce the most beautiful and profitable tropical plantations. The photographs reproduced in the MONTHLY WEATHER REVIEW for November, 1903, give a fair idea of the character of this garden spot. The general details as to orography may be seen in the relief map published in Bulletin L, Climate of California, by Prof. A. G. McAdie. It is easily understood by the meteorologist that northerly winds coming over the mountain ranges will bring dry and dusty weather, clear sky, hot days, and cool nights. Southerly winds, especially southwest winds, will push moist ocean air up the mountain slopes and give cloud and local rains to the southern slopes. Further details and tables of rainfall are given by Professor McAdie in the above-mentioned bulletin. In such a climate all vegetation depends on the rainfall of the winter season and the monthly